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INFORMATION DISCLOSURE	Application Number	09/882,621	<u> </u>
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	Group Art Unit	1648	W
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Attorney Docket Number

			U.S. PATENT D	OCUMENTS	
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WO 02/103012 A1	12-27-2002	Crucell Holland B.V.		
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		OTHER PRIOR ART NON PATENT LITERATURE DOCUMENTS	
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M	114	BALINT et al., Antibody engineering by parsimonious mutagenesis, Gene, 1993, pp. 109-18, Vol. 137.	
	3.	BARBAS III et al., In vitro evolution of a neutralizing human antibody to human immunodeficiency virus type 1 to enhance affinity and broaden strain cross-reactivity, Proc. Natl. Acad. Sci., April 1994, pp. 3809-13, Vol. 91, USA.	
	٠	BASS et al., Hormone Phage: An Enrichment Method for Variant Proteins With Altered Binding Properties, Proteins: Structure, Function, and Genetics, 1990, pp. 309-14, Vol. 8.	
		BEEKWILDER et al., A phagemid vector using the E. coli phage shock promoter facilitates phage display of toxic proteins, Gene, 1999, pp. 23-31, Vol. 228.	
	•	BEREK et al., Mutation Drift and Repertoire Shift in the Maturation of the Immune Response, Immunological Reviews, 1987, pp. 23-41, No. 96.	
	•	BURTON et al., Human Antibodies from Combinatorial Libraries, Advances in Immunology, pp. 191-280, Vol. 57.	
	,	CHATELLIER et al., Interdomain interactions within the gene 3 protein of filamentous phage, FEBS Letters, 1999, pp. 371-74, Vol. 463.	
	-	CRISSMAN et al., Gene-III Protein of Filamentous Phages: Evidence for a Carboxyl-Terminal Domain with a Role in Morphogenesis, Virology, 1984, pp. 445-55, Vol. 132.	
	-	CWIRLA et al., Peptides on phage: A vast library of peptides for identifying ligands, Proc. Natl. Acad. Sci., August 1990, pp. 6378-82, Vol. 87.	
ſ		DE KRUIF et al., Selection and Application of Human Single Chain Fv Antibody Fragments from a Semi-synthetic Phage Antibody Display Library with Designed CDR3 Regions, J. Mol. Biol., 1995, pp. 97-105, Vol. 248.	
V	,	DE KRUIF et al., Rapid selection of cell subpopulation-specific human monoclonal antibodies from a synthetic phage antibody library, Proc. Natl. Acad. Sci., April 1995, pp. 3938-42, Vol. 92, USA.	

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M	-		DENG et al., Interaction of the Globular Domains of pHI Protein of Filamentous Bacteriophage fd with the F-Pilus of Escherichia coli, Virology, 1999, pp. 271-77, Vol. 253.						
4-10	,	DEVLIN et al., Random Peptide Libraries: A 06, Vol. 249.	EVLIN et al., Random Peptide Libraries: A Source of Specific Protein Binding Molecules, Science, July 27, 1990, pp. 404- , Vol. 249.						
	. •	, , , , , , , , , , , , , , , , , , , ,	OUENAS et al., Clonal Selection and Amplification of Phage Displayed Antibodies by Linking Antigen Recognition and Phage Replication, Bio/Technology, October 1994, pp. 999-1002, Vol. 12.						
	1		DUENAS et al., Novel helper phage design: intergenic region affects the assembly of bacteriophages and the size of antibody ibraries, FEMS Microbiology Letters, 1995, pp. 317-22, Vol. 125.						
	e.	FELICI et al., Mimicking of discontinuous e protective monoclonal antibody against the E 128.							
		HAWKINS et al., Selection of Phage Antibo 889-96, Vol. 226.	dies by Binding Affinity, Mimicking A	ffinity Maturation, J. Mol. Biol., 1992, pp.					
		HOLLIGER et al., A conserved infection pathway for filamentous bacteriophages is suggested by the structure of the membrane penetration domain of the minor coat protein g3p from phage fd, Structure, 1997, pp. 265-75, Vol. 5, No. 2.							
		HOOGENBOOM et al., Designing and optimizing library selection strategies for generating high-affinity antibodies, TIB Tech, February 1997, pp. 62-70, Vol. 15.							
		KREBBER et al., Co-selection of cognate ar 227-31, Vol. 377.	ntibodyantigen pairs by selectively-in	fective phages, FEBS Letters, 1995, pp.					
		KREBBER et al., Selectively-infective Phag Interactions, J. Mol. Biol. 1997, pp. 607-18,	• •	Novel in vivo Selection for Protein-ligand					
V		KRISTENSEN et al., Proteolytic selection for protein folding using filamentous bacteriophages, Folding & Design, pp. 321-28, Vol. 3, No. 5.							

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Attorney Docket Number	2578-4957US	

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M	LOW et al., Mimicking Somatic Hypermutation: Affinity Maturation of Antibodies Displayed on Bacteriophage Using a Bacterial Mutator Strain, J. Mol. Biol., 1996, pp. 359-68, Vol. 260.							
1		LUBKOWSKI et al., The structural basis of phage display elucidated by the crystal structure of the N-terminal domains of g3p, Nature Structural Biology, February 1998, pp. 140-47, Vol. 5, No. 2.						
		LUBKOWSKI et al., Filamentous phage infection: crystal structure of g3p in complex with its coreceptor, the C-terminal domain of ToIA, Structure, 1999, pp. 711-22, Vol. 7, No. 6.						
	6	LUZZAGO et al., Mimicking of discontinuous epitopes by phage-displayed peptides, I. Epitope mapping of human H ferritin using a phage library of constrained peptides, Gene, 1993, pp. 51-57, Vol. 128.						
	LOPEZ et al., Morphogenesis of Filamentous Bacteriophage f1: Orientation of Extrusion and Production of Polyphage, Virology, 1983, pp. 177-93, Vol. 127.							
	MODEL et al., The Escherichia coli phage-shock-protein (psp) operon, Molecular Microbiology, 1997, pp. 255-61, Vol. 24, No. 2.							
	,	NELSON et al., Filamentous Phage DNA Cloning Vectors: A Noninfective Mutant with a Nonpolar Deletion in Gene III, Virology, 1981, pp. 338-50, Vol. 108.						
	4.	NILSSON et al., The Phage Infection Process: a Functional Role for the Distal Linker Region of Bacteriophage Protein 3, Journal of Virology, May 2000, pp. 4229-35, Vol. 74.						
		PRATT et al., Conditional Lethal Mutants of the Small Filamentous Coliphage M13. II. Two Genes for Coat Proteins, Virology, 1969, pp. 42-53, Vol. 39.						
		RAKONJAC et al., Filamentous phage infection-mediated gene expression: construction and propagation of the gIII delection mutant helper phage R408d3, Gene, 1997, pp. 99-103, Vol. 198.						
V		RAKONJAC et al., Roles of pIII in Filamentous Phage Assembly, J. Mol. Biol. 1998, pp. 25-41, Vol. 282.						

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law	-	RIECHMANN et al., The C-Terminal Doma 25, 1997, pp. 351-60, Vol. 90.	nin of TolA Is the Coreceptor of Filame	ntous Phage Infection of E. coli, Cell, July			
1		RONDOT et al., A helper phage to improve Vol. 19.	single-chain antibody presentation in p	hage display, Nature Biotech, pp. 75-78,			
		RUSSEL et al., Genetic Analysis of the Fila Journal of Virology, Aug. 1989, pp. 3284-95		al and of the Proteins That Interact with It,			
	SMITH, Filamentous Fusion Phage: Novel Expression Vectors That Display Cloned Antigens on the Virion Surface, Science, June 14, 1985, pp. 1315-17, Vol. 228.						
	SPADA et al., Selectively Infective Phages (SIP), Biol. Chem., June 1997, pp. 445-56, Vol. 378.						
VAUGHAN et al., Human antibodies by desig			sign, Nature Biotechnology, June 1998,				
	•-	WINTER et al., Man-made antibodies, Natu	re, January 24, 1991, pp. 293-99, Vol.	349.			
1		YANG et al., CDR Walking Mutagenesis fo Picomolar Range, J. Mol. Biol., 1995, pp. 39		uman Anti-HIV-1 Antibody into the			
M	`	PCT International Search Report, PCT/NL0	2/00391, dated November 25, 2002, 3 p	pages.			
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